President's Malaria Initiative

UGANDA INDOOR RESIDUAL SPRAYING (IRS) PROJECT – PHASE II

END OF SPRAY REPORT-ROUND III

October – December, 2013

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UGANDA INDOOR RESIDUAL SPRAYING (IRS) PROJECT PHASE II
END OF SPRAY REPORT

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Acronyms

CDFU	Communication for Development Foundation Uganda
COR	Contracting Officer's Representative
DEO	District Environmental Officer
DHT	District Health Team
DSO	District Supply Officer
ECO	Environmental Compliance Officer
FC	Field Coordinator
IEC	Information Education and Communication
IRS	Indoor Residual Spraying
ITN	Insecticide Treated Net
LC1	Local Council One
M&E	Monitoring & Evaluation
PMI	Presidential Malaria Initiative
SBCC	Social Behavior Change Communication
SK	Store keepers
SM	Store Managers
SO	Spray Operator
SSA	Sub Saharan Africa
USAID	United States Agency for International Development
VHT	Village Health Team
WHO	World Health Organization

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Executive Summary

The Uganda IRS Phase II project (June 2012- June 2017), is continuing to build on the achievements of Phase I, which was implemented from July 2009 – June 2012. In the October –December, 2013 timeframe, the project successfully completed spray round 3. It implemented several activities in preparation for this spray round including micro-planning meetings, stores and soak pit assessment and renovation/repairs, logistics distribution, spray teams recruitment and orientation, and health and safety measures.

A total of 3,173 spray operators (SOs) participated in round 3, of whom 813 (25 percent) were new entrants and 655 (20 percent) of the total recruited SOs were women As per schedule, spraying in group A districts commenced on October 14, 2013, and ended by November 21, 2013. Spraying in group B districts started on November 4, 2013 and was completed by December 7, 2013. During spraying, the project team adhered to IRS-related environmental compliance guidelines.

During this spray round, the overall IRS coverage was 92.7 percent, and all districts attained the target coverage of 90 percent with the exception of Kitgum. The average number of houses sprayed per SO was 12, and the average insecticide usage rate was 2.6 households per sachet.

During this spray round, the project also introduced the following innovations: stronger collaboration between Local Council One (LC1) chairpersons and SOs during SO training which was important for developing workable mobilization plans; use of the supervision checklist by all supervisors ; addition of monitoring and evaluation (M&E) questions to the dashboard data collection tool, to explore the validity of the data collected by the SO; and the use of hired motorcycles (boda bodas) to transport SOs to hard to reach areas.

During spray round 3, the project continued to face the ongoing challenge of insecticide pilferage and abuse, and took effective and timely remedial actions including tracking down the culprits and ensuring that the guilty individuals were prosecuted. For instance in Apac district, the project apprehended two SOs in Abongomola and Ibjue subcounties and all were successfully prosecuted and sentenced to two years and two months of community service respectively. The heavy rains, especially during logistics distribution and at the beginning of spraying in group A districts, slowed down distribution and spraying. The harvest season in some districts, particularly in Kitgum and Lamwo, also interfered with spraying, as it led to some households shifting to farmlands far away from their usual residences, and hence were unavailable when the SOs came for spraying their houses.

1. Background

The overall objective of the IRS Phase II project is to achieve the President's Malaria Initiative (PMI) Uganda targets for IRS. The goal of PMI is to halve the burden of malaria in 70 percent of the at-risk populations of sub-Saharan Africa (SSA), thereby removing malaria as a major public health problem. One of the two PMI objectives for SSA is to reduce malaria-related mortality by 70 percent by the end of 2015 in the original 15 PMI supported countries, which include Uganda. The IRS Phase II project contributes to USAID/Uganda's Development Objective 3, whose aim is to improve outcomes in health, HIV/AIDS and education in Uganda through three main objectives:

a. To implement a high quality, safe and effective IRS program
b. To develop national capacity to conduct IRS
c. To perform comprehensive monitoring and evaluation of the IRS program.

2. Summary of Key Spray Round Activities

- **Micro-Planning**

The spray operations for the IRS Phase II project, spray round 3 began with micro-planning meetings held between August 26 and 30, 2013 in all 10 project districts. These meetings were held concurrently in both group A and B districts. This helped the project to reduce the time taken to implement this activity. A total of 460 participants including District Health Teams (DHTs), District Environmental Officers (DEOs), District Supply Officers (DSOs), sub-county supervisors which included Health Assistants, and Village Health Teams (VHTs), and storekeepers (SKs) attended these workshops. 81 of the total participants who attended these sessions were women, which translate to 17.6 percent of the total number of participants. It is to be noted that during these micro-planning sessions the SKs were trained to train the SOs at the parish level, and work together with the village LC1 chairpersons to draft spray schedules. Previously the sub-county supervisors conducted the training of SOs. This change helped ensure that the SO training was more effective and encouraged greater participation by the LC1s in spraying activities.

- **Sub-County Spray Team Recruitment and Refresher Training**

One week after the micro-planning meetings and SK training, the field coordinators (FCs) in collaboration with the district IRS teams conducted recruitment of spray teams. The project used participatory recruitment methods, thereby ensuring that the recruits were VHT members, recommended by their communities.

During this spray round, the strategy was to ensure that at least one SO was recruited from each village within a parish. This was important for ensuring that during the actual spraying, the SO from that particular village would assist in mobilization and lead the spray team in that village. A total of 3,173 SOs participated in round 3, of whom 813 (25 percent) were new entrants. In comparison to round 2 in which 456 women SOs participated, the number of women SOs increased to 655 in this round (20 percent of the total SOs).

- **Commencement and Completion of Spray Round**

After delivery of supplies to the parish stores, the project team, the district IRS teams and the sub-county supervisors conducted orientation and training of the spray teams for both group A and B districts. As per schedule, spraying in group A districts commenced on October 14, 2013, and ended by November 21, 2013. Spraying in group B districts started on November 4, 2013 and was completed by December 7, 2013.

- **Logistics Distribution for Group A & B Districts:**

Distribution of logistics for group A districts commenced on October 7, 2013, while for group B districts, distribution commenced on October 28, 2013. The project implemented three additional logistics-related activities (pump assessment, pump calibration and pump maintenance) in the 10 project districts. The DSOs, IRS Focal Persons and Uganda IRS project staff, implemented these activities. During this exercise, the project serviced and repaired all faulty pumps. Of the 4,371 pumps owned by the project, only 4310 (98 percent) were serviced.

- **Stores and Soak-Pits Verifications and Renovations**

The project's Environment Compliance Officer (ECO), complemented by FCs, SMs and district staff (DEOs and IRS District Focal Persons), inspected and verified all parish stores, soak-pits and wash bays in group A and group B districts, prior to the distribution of any logistical items. In the process of store verification, a total of 274 soak pits were inspected, of which 260 (94.9 percent) soak pits were repaired and only 14 needed to be relocated. The verification revealed that 262 (95.6 percent) of the parish stores were in good condition while the rest required minor repairs, which were done by the project.

- **Health and Safety Measures**

In order to ensure the health and safety of spray team members, all spray team personnel who participated in the spray round were medically examined to screen out those with diseases or conditions that would disqualify them from participating in spraying. To reinforce the spray teams' adherence to the IRS environmental compliance guidelines, the ECO developed 'Environmental Compliance Guidelines', which were distributed and displayed conspicuously at each parish store for the spray teams to refer to continuously during the spray period.

- **Environmental Compliance Monitoring**

During the supportive supervision of spray activities in both group A & B districts, the project's ECO, FCs, SMs, as well as the district IRS supervisors at all levels ensured that the teams complied with the IRS-related environmental compliance guidelines. Staff in all 10 project districts adhered to the guidelines by ensuring that the teams were always dressed in full PPE, properly conducted triple rinsing, bathed at site after the day's work before going home and washed their overalls, polythene sheets, and other equipment.

- **IRS Solid Waste Management**

The SMs in partnership with the DSOs retrieved IRS-related solid waste from parish stores to district stores, and a total of 10,309.5kgs was collected at the end of the spray round. This was stored at the Gulu central waste store and was subsequently incinerated.

- **Community Mobilization**

Communication for Development Foundation Uganda (CDFU), the project's partner for communication oriented LC1s in the entire 10 district on social mobilization for IRS. LC1s at the village level in coordination with the IRS committees at the parish level are key for IRS mobilization. More than 4500 LC1s received important IRS related messages from CDFU that included:

- general information about IRS
- key participants for successful IRS
- behavior change that can prevent mosquitoes in the houses after spraying
- effects of not spraying houses completely or fully
- what communities need to do before, during and after spraying

Table 1: Summary of Key IRS Indicators for Round 3, Phase II: October-December 2013

SNo	INDICATOR	DISTRICTS										TOTAL
		Kitgum	Lamwo	Pader	Agago	Apac	Kole	Oyam	Amuru*	Nwoya*	Gulu*	
1	No of districts sprayed	1	1	1	1	1	1	1	1	1	1	10
2	Targeted households	63,836	73,403	94,350	115,654	77,235	64,917	102,909	80,696	35,463	162,480	870,943
3	Total households Found	71,066	75,996	93,895	113,839	98,399	71,138	103,324	85,356	38,270	168,667	919,950
4	Households fully sprayed	63,042	69,663	88,095	107,870	85,735	63,029	95,676	80,509	36,414	152,030	842,063
5	Households partly sprayed	424	0	53	63	3,624	2,704	2,724	7	14	498	10,111
6	Total households fully and partly sprayed	63,466	69,663	88,148	107,933	89,359	65,733	98,584	80,516	36,428	152,528	852,358
7	Households not sprayed	7,600	6,333	5,747	5,906	9,040	5,405	4,740	4,840	1,856	16,139	67,606
8	% of households partly or fully sprayed	89.3%	91.7%	93.9%	94.8%	90.8%	92.4%	95.4%	94.3%	95.2%	90.4%	92.7%
9	% of households not sprayed at all	10.7%	8.3%	6.1%	5.2%	9.2%	7.6%	4.6%	5.7%	4.8%	9.6%	7.3%
10	Targeted population	209,384	233,988	280,024	389,768	215,268	180,258	287,250	257,299	111,081	503,591	2,667,911
11	Total population Found	214,811	227,419	282,174	368,166	265,046	190,807	274,821	266,212	116,365	502,525	2,708,346
12	Female population protected	98,506	106,899	136,172	177,297	124,955	91,902	135,171	128,622	57,382	236,384	1,293,290
13	Male population protected	95,272	104,042	131,057	173,629	119,129	85,864	128,011	125,169	54,036	222,798	1,239,007
14	Total population protected	193,778	210,941	267,229	350,926	244,084	177,766	263,182	253,791	111,418	459,182	2,532,303
15	Total population not protected	21,033	16,478	14,945	17,240	20,962	13,041	11,519	12,421	4,947	43,343	175,926
16	% of population protected	90.2%	92.8%	94.7%	95.3%	92.1%	93.2%	95.8%	95.3%	95.7%	91.4%	93.5%
17	% of population not protected	9.8%	7.2%	5.3%	4.7%	7.9%	6.8%	4.2%	4.7%	4.3%	8.6%	6.5%
18	No. of children under five protected	38,835	43,097	58,196	76,244	49,632	35,503	52,606	58,693	26,527	94,093	533,426
19	No. of pregnant women protected	3,431	4,628	7,964	10,741	5,375	3,442	5,913	7,850	3,504	15,344	68,192

SNo	INDICATOR	DISTRICTS										TOTAL
		Kitgum	Lamwo	Pader	Agago	Apac	Kole	Oyam	Amuru*	Nwoya*	Gulu*	
20	No. of mosquito nets found	26,372	23,395	39,267	57,182	51,548	21,500	40,726	16,271	9,633	83,855	369,749
21	No. of children under 5 sleeping under a net	18,487	16,692	27,247	51,686	23,711	11,806	21,754	15,433	7,084	40,628	234,528
22	No. of insecticide sachets used	24,114	25,518	32,676	39,884	35,436	26,254	38,647	29,879	13,440	61,646	327,494
23	Average number of households sprayed per sachet	2.6	2.7	2.7	2.7	2.5	2.5	2.5	2.7	2.7	2.5	2.6
24	Number of spray operators	255	257	335	413	313	249	363	266	132	590	3,173
25	Number of female spray operators	67	38	99	84	53	35	68	10	15	186	655
26	Average number of households sprayed per spray operator per day	10.4	12.3	11.4	11.9	11.9	12.0	11.8	13.8	12.5	11.8	11.7
27	Average number of spray days	24	22	23	22	24	22	23	22	22	22	23

3. Summary of Spray Results

The next sections of the report present a brief performance analysis of round 3 spray operations, covering the following key areas: IRS coverage, population protected, insecticide usage rates and overall performance of spray teams. It also provides a snapshot analysis of these areas in relation to the previous spray rounds i.e. rounds 1and round 2 respectively.

3.1 Households Sprayed

In comparison to round 2 which recorded 902,635 households found, this spray round recorded an increase in the number of households found (919,950). This was primarily due to the project's enhanced supervision and monitoring measures. Such measures included: promoting well performing VHTs to supervisors, training of SOs by SKs at the parish level which also included the greater involvement of LC1 chairpersons, and the use of the supervisory checklist by all supervisors for continuous field supervision.

By the end of round 3, the project sprayed a total of 852,358 households in the 10 project districts compared to the 870,943 households sprayed in round 2. Overall, in this round 67,607 households were not sprayed in comparison to 31,779 households from round 2. This trend of increased number of unsprayed households in this round as compared to the previous round was noticed across all districts. Similar reasons from round 2 such as agricultural activities, poor weather conditions and hard to reach areas were some challenges faced by the project during spraying. However, this trend also reflects better and proper recording of spray data by the SOs and increased supervision at all levels during spray round 3.

Table 2: Number of Households Fully and Partially Sprayed in Nov/Dec 2013 and April/May 2013

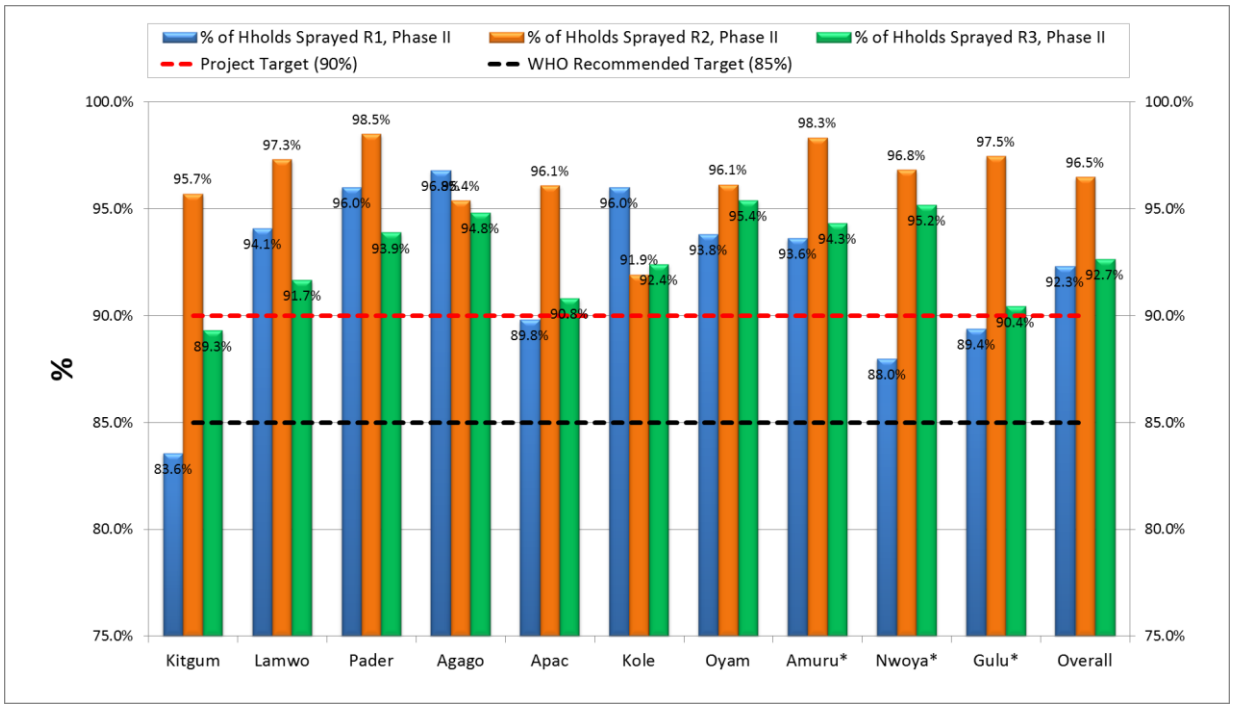
District	Round 3 (April/May, 2013)			Round 2 (Nov/Dec, 2013)		
	Fully sprayed	Partially sprayed	Total	Fully sprayed	partially sprayed	Total
Kitgum	63,042	424	63,466	63,636	200	63,836
Lamwo	69,663	0	69,663	73,386	17	73,403
Pader	88,095	53	88,148	94,304	46	94,350
Agago	107,870	63	107,933	115,595	59	115,654
Apac	85,735	3,624	89,359	74,943	2,292	77,235
Kole	63,029	2,704	65,733	62,920	1,997	64,917
Oyam	95,860	2,724	98,584	100,575	2,334	102,909
Amuru	80,509	7	80,516	80,688	8	80,696
Nwoya	36,414	14	36,428	35,389	74	35,463
Gulu	152,030	498	152,528	161,966	514	162,480
TOTAL	842,247	10,111	852,358	863,402	7,541	870,943

3.2 IRS coverage

All the project districts achieved the World Health Organization's (WHO) recommended target of 85 percent. According to the WHO guidelines, 85 percent coverage is sufficient for IRS to have an impact on malaria transmission. Overall, the project achieved 92.7 percent coverage, which is above the WHO recommendation. This is in comparison to round 2 that had coverage of 96.5 percent. The project attributes this change in coverage from round 2 to round 3 to increased supervision and monitoring as mentioned above which led to better recording of spray related data.

The project's mandatory target of 90 percent was achieved in all districts except Kitgum which historically has been a difficult district, which had coverage of 89.3 percent. Gulu and Apac districts were slightly above the target.

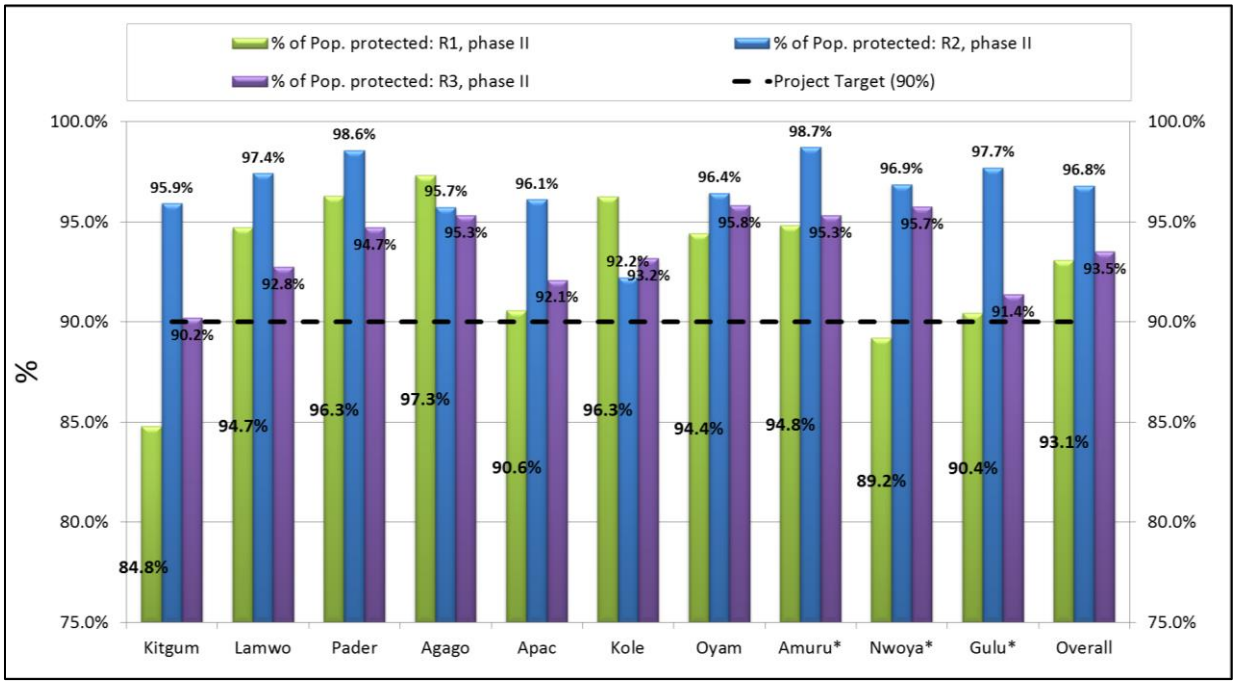
Figure 1: IRS Coverage of the Past Three Rounds (R3, R2, and R1) of Phase II of Project in All Districts



3.3 Protected and Unprotected Population

The ultimate purpose of the IRS is to contribute to the reduction of malaria prevalence through protection of the most vulnerable population group from the effect of malaria. These vulnerable population groups include expectant mothers and children less than 5 years of age. Spray round 3 which concluded on December 7, 2013 protected 2,532,413 out of 2,708,346 persons found, which translates to 93.5 percent of the estimated population. The population protected comprises of 48.9 percent males and 51.1 percent females. The project also protected a total 533,453 children aged 0-5 years and 68,193 pregnant women in the target areas. This spray round protected 93.5 percent of the estimated population when compared to the round 2 which protected 96.8 percent of the population.

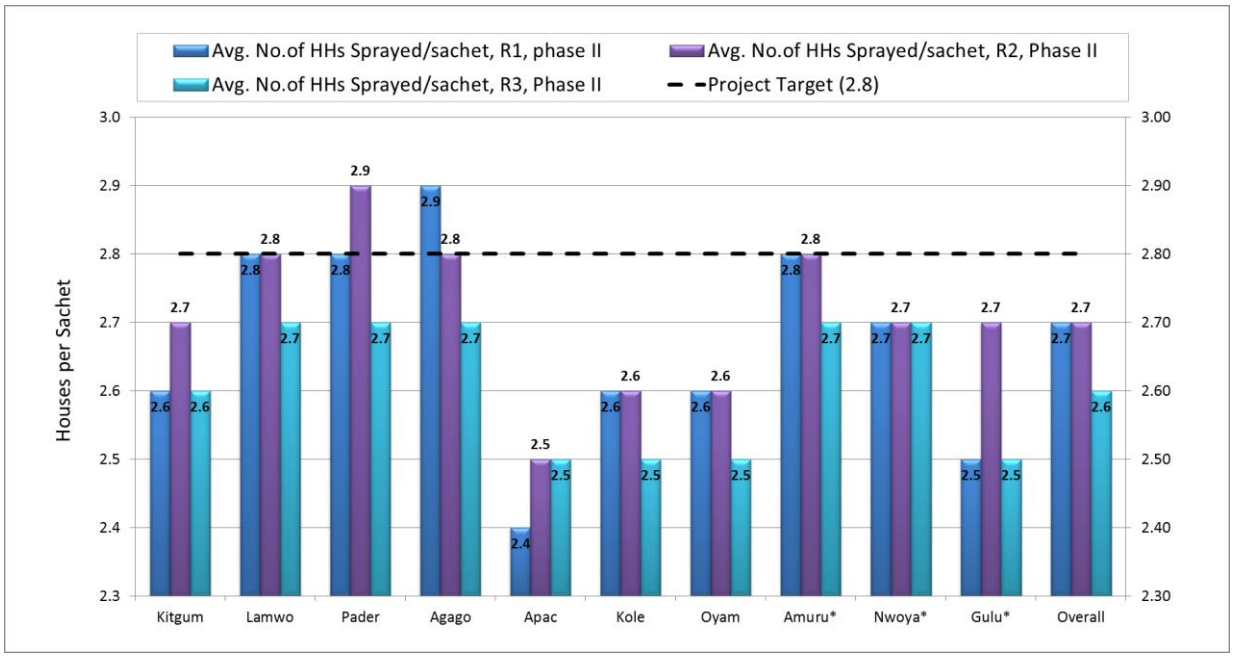
Figure 2: Percentage of Population Protected, R3, R2, R1 of Phase II in the Project Area



3.4 Insecticide Usage Rate

Insecticide is the key element of IRS, with a residual effect once sprayed on the inside surface walls of dwelling places. For spray round 3, the project used a total of 327,494 insecticide sachets of Bendiocarb to spray 852,174 households resulting in a usage rate of 2.6 households sprayed per sachet. This is in comparison to 2.7 households per sachet in the previous round. The number of insecticide sachets used this round increased slightly by approximately 1.5 percent from the previous spray round. The project maintained this effective insecticide usage rate by emphasizing extensive pump servicing and pumps calibration. As mentioned earlier, the project also diligently monitored insecticide usage rates, apprehended and in some cases prosecuted in disciplined SOs who tried to steal insecticide.

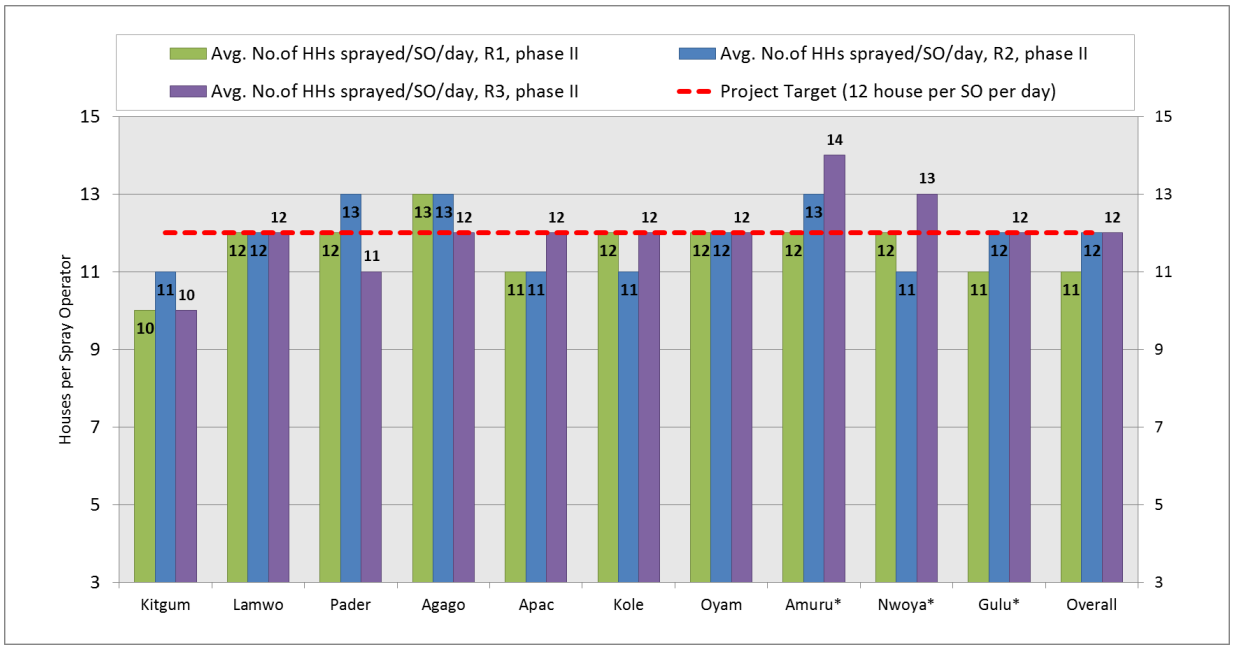
Figure 3: Comparison of Insecticide Usage Rate for Round R3, R2, and R1 of Phase II by District



3.5 Work Performance of Spray Teams

During spray round 3, the project utilized 3,173 SOs to spray a total of 852,174 households in the 10 project districts. All the 10 districts accomplished the spraying in an average of 23 days (Table 12). Overall, for this round, each SO sprayed an average of 12 households per day, with the exception of Nwoya and Amuru districts which achieved the target of 13 households per SO per day.

Figure 4: Average Number of Households Sprayed Per SO Per Day, For Rounds R3, R2, R1 by Districts for IRS Project, Phase II



4. Successful Interventions/Challenges/ Lessons Learned & Recommendations

4.1 Successful Interventions

- In this spray round, the project invited the LC1 chairpersons to the training of SOs at the parish stores to enable them to interact and develop the mobilization plans together to ensure that villages were mobilized well in advance of the spray day. Additionally the LC1 chairpersons were asked to list all the sprayable houses in their villages. In villages where the LC1 chairpersons diligently listed the houses, it was easier to monitor spray progress and track down the unsprayed houses. For instance in Tul-Tul central village, under Katwotwo parish store in Orom sub-county, Kitgum district, the LCI chairperson listed all the sprayable houses in the village in an exercise book, and used this to track unsprayed households, and subsequently encouraged them to have their houses sprayed. This resulted in 100 percent IRS coverage in that particular village.
- The project modified and improved the existing supervision checklist which was used by all supervisors to check the validity of the data collected by SOs. Supervisors used this new IRS supervisory checklist throughout the spray period to emphasize continuous data quality assurance, to identify errors recorded in the spray cards, and the daily performance charts at the parish levels. The project also used the data entry verification tool to regularly check the quality of data entry at all the 10 district data centers.
- Additional questions were included in the dashboard data collection tool to explore the validity of the SOs' data. These questions were part of the post-spray data quality audit process which included random sampling of households in the sprayed communities (1200 households across 10 project districts) according to established parameters to validate the reported spray coverage. An analysis of these results will be available in the October-December 2013 quarterly report.
- Because of the heavy rains, some hard to reach areas in Nwoya district became inaccessible by trucks. To overcome this obstacle, the project hired motorcycles (boda bodas) to transport the SOs. This approach proved to be more feasible and less expensive than hiring trucks.

4.2 Key Challenges /Constraints

- The project continues to face the challenges of insecticide pilferage and abuse. However in this spray round, the project continued to emphasize vigilance, and strengthened monitoring by the district authorities and project staff. This led to some successful apprehension and prosecution of SOs who were found in illegal possession of insecticide sachets. This was done in collaboration with district local government authorities.
- In some sub-counties in Amuru, Apac and Oyam districts, poor mobilization coupled with SO misconduct resulted in low coverage. In these districts, the spraying exercise was halted for a few days to put in place strategies for better mobilization and subsequently better performance. There was better performance on resumption of activities.
- The early and heavy rains at the start of spraying, which led to poor road conditions, for group A districts, affected the progress of spray teams. Bad weather and road conditions led to delays in timely deliveries to parish stores and slowed the progress of spraying.
- The spray period coincided with the harvest season especially for Sim Sim. As a result, in some villages a significant number of houses were found locked despite the mobilization by LCI chairpersons. In such cases, the project made additional efforts to return to these villages, in order to spray the houses. Additionally the project partner CDFU together with district IRS teams intervened using multiple approaches including community dialogue, radio talk shows and house-to-house visits by sub-county IRS committee members to have these households sprayed.
- There are some hard to reach areas which are not easily accessed by SOs using their bicycles. For example, in Lamwo district, some villages served by Pawach store in Agoro sub-county and Pangira store in Lukung sub-county are extremely difficult to reach. To address this problem, the project created soak pits at the nearest possible points in these sub-counties. Subsequently the SOs camped in these villages for several days and returned to their respective parish stores after completion of spraying in these villages.

4.3 Recommendations

- Insecticide pilferage and abuse has continued to be a challenge to the project. There is need to develop community policing mechanisms to curb this vice. Options under consideration for the next spray round include a toll free line for reporting suspected pilferage and a reward for whistle blowers.
- Following the Ministry of Health's approval of the use of smart phones, the project recommends geocoding all households in the 10 project districts to verify exact numbers.

5. Appendix

The tables below (Tables 3 -12) refer to sub-county level results for households sprayed, coverage, and population protected during Phase II, Round 3.

Table 3: Pader Summary of Results by Sub-County R3, Phase II, October – November 2013

District	Subcounty	Houses Found	Houses Sprayed	Unsprayed houses	IRS Coverage	Protected population					Unprotected population	% of population protected
						Female	Male	Total	Pregnant women	Children <5 years		
Pader	Acholibur	10,037	9,792	245	97.6	15,925	15,109	31,034	1,344	6,819	428	98.6
	Angagura	3,886	3,735	151	96.1	5,450	5,250	10,700	201	2,449	412	96.3
	Atanga	6,038	5,573	465	92.3	8,708	8,215	16,923	315	3,657	1,356	92.6
	Awere	16,681	15,912	769	95.4	24,155	23,059	47,214	1,896	10,964	1,679	96.6
	Kilak	5,396	5,260	136	97.5	7,067	7,405	14,472	505	2,947	362	97.6
	Laguti	5,843	5,372	471	91.9	8,219	7,751	15,970	463	3,414	1,194	93.0
	Lapul	6,356	5,985	371	94.2	9,616	9,202	18,818	446	4,583	1,029	94.8
	Latanya	5,468	5,096	372	93.2	7,982	7,791	15,773	305	3,426	959	94.3
	Ogom	5,966	5,695	271	95.5	10,070	9,205	19,275	529	4,269	747	96.3
	Pader TC	7,706	6,664	1,042	86.5	11,406	11,467	22,873	610	4,386	3,012	88.4
	Pajule	6,634	5,861	773	88.3	9,814	9,491	19,305	455	4,318	2,218	89.7
	Puranga	13,884	13,203	681	95.1	17,760	17,112	34,872	895	6,964	1,549	95.7
Pader Total		93,895	88,148	5,747	93.9	136,172	131,057	267,229	7,964	58,196	14,945	94.7

Table 4: Oyam Summary of Results by Sub-County R3, Phase II, October – November 2013

District	Subcounty	Houses Found	Houses Sprayed	Unsprayed houses	IRS Coverage	Population protected					Unprotected population	% of population protected
						Female	Male	Total	Pregnant women	Children <5 years		
Oyam	Aber	22,612	21,744	868	96.2	29,115	27,048	56,781	1,183	10,503	1,866	96.8
	Acaba	11,360	10,889	471	95.9	14,970	14,487	29,457	647	6,012	1,134	96.3
	Iceme	11,700	10,817	883	92.5	15,360	14,101	29,461	628	6,077	2,026	93.6
	Loro	14,663	13,916	747	94.9	19,015	18,099	37,114	784	7,392	1,847	95.3
	Minakulu	17,765	17,144	621	96.5	23,232	21,438	44,670	1,183	8,761	1,344	97.1
	Ngai	10,437	10,126	311	97.0	13,676	13,566	27,242	589	5,583	983	96.5
	Otwal	14,787	13,948	839	94.3	19,870	18,703	38,573	899	8,278	2,323	94.3
Oyam Total		103,324	98,584	4,741	95.4	135,171	128,011	263,182	5,913	52,606	11,523	95.8

Table 5: Kole Summary of Results by Sub-County R3, Phase II, October – November 2013

District	Subcounty	H ouses Found	Houses Sprayed	Unsprayed houses	IRS Coverage	Population protected					Unprotected population	% of population protected
						Female	Male	Total	Pregnant women	Children <5 years		
Kole	Aboke	10,644	10,134	510	95.2	15,850	14,523	30,373	602	6252	1,200	96.2
	Akalo	9,430	8,844	586	93.8	11,198	10,199	21,397	303	3369	1,358	94.0
	Alito	25,200	23,895	1,305	94.8	33,398	32,073	65,471	1,493	1,4351	3,356	95.1
	Ayer	10,861	9,637	1,224	88.7	13,423	12,741	26,164	465	5267	3,036	89.6
	Bala	15,003	13,223	1,780	88.1	18,033	16,328	34,361	579	6264	4,091	89.4
Kole Total		71,138	65,733	5,405	92.4	91,902	85,864	177,766	3,442	35,503	13,041	93.2

Table 6: Apac Summary of Results by Sub-County R3, Phase II, October – November 2013

District	Subcounty	Houses Found	Houses Sprayed	Unsprayed houses	IRS Coverage	Population protected					Unprotected population	% of population protected
						Female	Male	Total	Pregnant women	Children <5 years		
Apac	Abongomola	11,,060	9,905	1,155	89.6	13,539	13,005	26,544	520	5,816	2,578	91.1
	Aduku	10,969	9,811	1,158	89.4	15,657	13,511	29,168	537	5,566	2,626	91.7
	Akokoro	9,421	8,804	617	93.5	12,233	12,278	24,511	715	5,156	1,347	94.8
	Apac	13,226	11,794	1,432	89.2	15,639	14,923	30,562	650	5,788	3,252	90.4
	Apac TC	3,244	2,938	306	90.6	5,593	5,432	11,025	250	1,724	,963	92.0
	Chawente	8,758	7,802	956	89.1	10,506	10,292	20,798	477	4,491	2,194	90.5
	Chegere	10,128	9,332	796	92.1	12,396	12,361	24,757	598	5,124	1,756	93.4
	Ibuje	12,407	11,876	531	95.7	16,980	15,744	32,724	751	7,372	1,682	95.1
	Inomo	6,338	5,420	918	85.5	7,073	6,754	13,827	229	2,431	2,024	87.2
	Nambieso	12,848	11,677	1,171	90.9	15,339	14,829	30,168	648	6,164	2,540	92.2
Apac Total		98,399	89,359	9,040	90.8	124,955	119,129	244,084	5,375	49,632	20,962	92.1

Table 7: Amuru Summary of Results by Sub-County R3, Phase II, October – November 2013

District	Subcounty	Houses Found	Houses Sprayed	Unsprayed houses	IRS Coverage	Population protected					Unprotected population	% of population protected
						Female	Male	Total	Pregnant women	Children <5 years		
Amuru	Amuru	20,324	19,366	958	95.3	32,121	30,937	63,058	2,593	15,802	2,819	95.7
	Amuru TC	8,227	7,708	519	93.7	12,422	12,382	24,804	972	6,296	1,420	94.6
	Atiak	16,231	15,445	786	95.2	22,372	21,369	43,741	1,116	9,269	1,624	96.4
	Lamogi	18,869	17,597	1,272	93.3	27,778	26,679	54,457	1,316	12,202	2,943	94.9
	Pabbo	21,705	20,400	1,305	94.0	33,929	33,802	67,731	1,853	15,124	3,620	94.9
Amuru Total		85,356	80,516	4,840	94.3	128,622	125,169	253,791	7,850	58,693	12,426	95.3

Table 8: Agago Summary of Results by Sub-county R3, Phase II, October – November 2013

District	Subcounty	Houses Found	Houses Sprayed	Unsprayed houses	IRS Coverage	Population protected					Unprotected population	% of population protected
						Female	Male	Total	Pregnant women	Children <5 years		
Agago	Adilang	7,130	6,780	350	95.1	11,612	11,266	22,878	516	5,591	1,012	95.8
	Arum	6,460	5,985	475	92.6	8,614	8,483	17,097	461	3,692	999	94.5
	Kalongo TC	4,424	4,369	55	98.8	8,679	7,072	15,751	768	2,538	143	99.1
	Kotomor	5,530	4,978	552	90.0	7,256	7,145	14,401	237	2,758	1,467	90.8
	Lamiyo	4,281	4,168	113	97.4	6,340	6,127	12,467	288	2,794	244	98.1
	Lapono	18,922	17,269	1,653	91.3	30,752	30,257	61,009	2284	14,626	5,631	91.6
	Lira Palwo	4,993	4,712	281	94.4	7,807	7,938	15,745	375	3,598	796	95.2
	Lukole	11,871	11,315	556	95.3	19,099	18,736	37,835	1371	8,673	1,734	95.6
	Omiya Pacwa	8,126	7,966	160	98.0	11,503	11,514	23,017	768	4,640	448	98.1
	Omot	6,374	6,201	173	97.3	9,137	8,877	18,014	526	3,537	566	97.0
	Paimol	11,706	11,218	488	95.8	19,119	20,581	39,700	1285	8,151	1,476	96.4
	Parabongo	8,214	7,898	316	96.2	13,123	12,177	25,300	772	5,029	600	97.7
	Patongo	3,660	3,634	26	99.3	5,472	5,220	10,692	209	2,345	77	99.3
	Patongo TC	3,984	3,718	266	93.3	6,354	6,557	12,911	317	2,971	778	94.3
	Wol	8,164	7,722	442	94.6	12,430	11,679	24,109	564	5,301	1,281	95.0
Agago Total		113,839	107,933	5,906	94.8	177,297	173,629	350,926	10741	76,244	17,252	95.3

Table 9: Gulu Summary of Results by Sub-County R3, Phase II, October – November 2013

District	Subcounty	Houses Found	Houses Sprayed	Unsprayed houses	IRS Coverage	Population protected					Unprotected population	% of population protected
						Female	Male	Total	Pregnant women	Children <5 years		
Gulu	Awach	9,576	8,918	658	93.1	12,852	12,067	24,913	628	5,116	1,533	94.2
	Bobi	10,336	9,228	1,108	89.3	12,864	11,986	24,850	475	4,959	2,769	90.0
	Bungatira	8,045	7,604	441	94.5	11,731	11,136	22,867	554	4,698	1,267	94.8
	GMC_Bardege	16,368	13,940	2,428	85.2	26,480	21,039	47,519	2,313	9,347	6,617	87.8
	GMC_Laroo	10,758	10,087	671	93.8	17,162	16,338	33,500	1,614	7,300	1,921	94.6
	GMC_Layibi	11,547	8,583	2,964	74.3	14,951	15,628	30,579	1,183	5,863	7,676	79.9
	GMC_Pece	12,699	10,282	2,417	81.0	16,653	15,686	32,339	1,694	6,610	7,400	81.4
	Koro	13,089	12,416	673	94.9	17,590	16,543	34,133	996	6,781	1,767	95.1
	Lakwana	10,384	9,997	387	96.3	13,113	12,207	25,320	554	4,913	1,038	96.1
	Lalogi	13,546	13,085	461	96.6	19,644	18,963	38,607	1,320	8,433	1,225	96.9
	Odek	18,150	17,192	958	94.7	25,728	24,898	50,626	1,623	10,644	2,675	95.0
	Ongako	8,890	8,677	213	97.6	13,930	12,902	26,832	760	5,225	574	97.9
	Paicho	8,429	7,667	762	91.0	11,313	10,758	22,071	531	4,865	1,850	92.3
	Palaro	4,802	3,981	821	82.9	5,935	5,747	11,682	269	2,560	2,065	85.0
	Patiko	7,350	6,873	477	93.5	10,319	10,070	20,389	545	4,589	1,270	94.1
	Unyama	4,698	3,998	700	85.1	6,119	6,830	12,949	285	2,190	1,696	88.4
Gulu Total		168,667	152,528	16,139	90.4	236,384	222,798	459,176	15,344	94,093	43,343	91.4

Table 10: Kitgum Summary of Results by Sub-County R3, Phase II, October – November 2013

District	Subcounty	Houses Found	Houses Sprayed	Unsprayed houses	IRS Coverage	Population protected					Unprotected population	% of population protected
						Female	Male	Total	Pregnant women	Children <5 years		
Kitgum	Akwang	4,805	4,380	425	91.2	6,688	6,380	13,068	213	2,693	1,084	92.3
	Amida	4,915	4,340	575	88.3	6,699	6,547	13,246	253	2,974	1,430	90.3
	Kitgum Matidi	6,142	5,810	332	94.6	8,433	8,280	16,713	319	3,346	804	95.4
	Kitgum TC	11,027	8,158	2,869	74.0	16,308	14,291	30,599	530	5,665	8,660	77.9
	Lagoro	4,973	4,394	579	88.4	6,669	6,631	13,300	206	2,935	1,678	88.8
	Layamo	5,222	4,968	254	95.1	7,289	7,131	14,420	267	2,840	676	95.5
	Mucwini	8,927	7,659	1,268	85.8	11,868	11,615	23,483	438	4,410	3,138	88.2
	Namokora	6,326	5,898	428	93.2	8,828	9,511	18,339	282	3,596	1,232	93.7
	Omiya Anyima	10,697	10,311	386	96.4	14,030	13,516	27,546	412	5,439	999	96.5
	Orom	8,032	7,548	484	94.0	11,694	11,370	23,064	511	4,937	1,331	94.5
Kitgum Total		71,066	63,466	7,600	89.3	98,506	95,272	193,778	3431	38,835	21,032	90.2

Table 11: Lamwo Summary of Results by Sub-County R3, Phase II, October – November 2013

District	Subcounty	Houses Found	Houses Sprayed	Unsprayed houses	IRS Coverage	Population protected					Unprotected population	% of population protected
						Female	Male	Total	Pregnant women	Children <5 years		
Lamwo	Agoro	13,892	13,145	747	94.6	22,613	21,372	43,985	1,233	9,653	2,263	95.1
	Lokung	9,562	8,043	1,519	84.1	11,806	11,850	23,656	490	5,259	3,909	85.8
	Madi Opei	6,618	6,131	487	92.6	9,435	9,377	18,812	348	3,378	1,346	93.3
	Padibe East	12,452	11,490	962	92.3	16,797	16,822	33,619	601	6,233	2,391	93.4
	Padibe West	7,066	6,383	683	90.3	10,087	8,876	18,963	330	3,600	1,962	90.6
	Palabek Gem	7,249	6,320	929	87.2	9,231	8,945	18,176	336	3,792	2,320	88.7
	Palabek Kal	8,187	7,873	314	96.2	10,534	10,749	21,283	478	3,928	921	95.9
	Palabek Ogili	6,306	5,988	318	95.0	9,992	9,753	19,745	589	4,698	607	97.0
	Paloga	4,664	4,290	374	92.0	6,404	6,298	12,702	223	2,556	761	94.3
Lamwo Total		75,996	69,663	6,333	91.7	106,899	104,042	210,941	4,628	43,097	16,480	92.8

Table 12: Nwoya Summary of Results by Sub-County R3, Phase II, October – November 2013

District	Subcounty	Houses Found	Houses Sprayed	Unsprayed houses	IRS Coverage	Population protected					Unprotected population	% of population protected
						Female	Male	Total	Pregnant women	Children <5 years		
Nwoya	Alero	13,570	12,797	773	94.3	19,880	19,358	39,238	1,118	9,433	2,,076	95.0
	Anaka	7,970	7,511	459	94.2	11,989	10,782	22,771	696	5,353	1,058	95.6
	Koch Goma	9,729	9,528	201	97.9	14,893	13,893	28,786	974	6,463	522	98.2
	Purongo	7,001	6,578	423	94.0	10,620	10,003	20,623	716	5,278	1,291	94.1
Nwoya Total		38,270	36,414	1,856	95.2	57,382	54,036	111,418	3,504	26,527	4,947	95.7